Intel® Pentium® 4 processor and Intel® E7210 chipset-based entry servers: Affordability without compromise of features or functions.

The Intel® E7210 Chipset for Affordable yet Reliable, Entry-level Server Platforms

For small and medium businesses, server downtime means business downtime, and business downtime translates into lost productivity and revenue. Business users require servers that are powerful enough to handle their computing workloads, and at the same time provide reliable and trouble-free operation. Intel offers two server platforms specifically targeted for the small and medium business market segments. The first is a mainstream volume and performance server powered by dual Intel® Xeon™ processors and the Intel® E7501 chipset. The second is an entry-level server based on the Intel® Pentium® 4 processor supporting HT (Hyper-Threading) Technology[1] with the Intel® E7210 chipset. For budget-conscious business users, an entry-level server delivers impressive computing performance without compromising system reliability, and represents a significant step up from "servers" based on desktop PCs.

Introducing Intel's first chipset optimized for the entry server segment

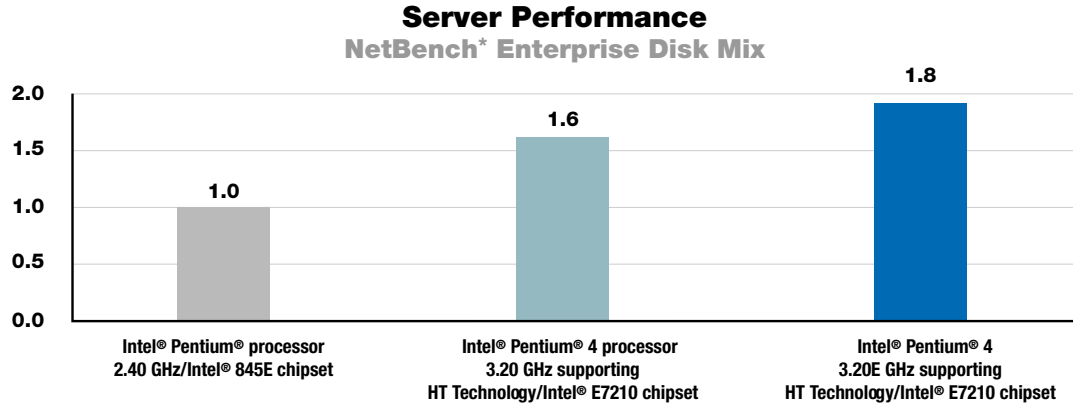
The highly integrated Intel E7210 chipset, consisting of the Intel E7210 memory controller hub and the Intel® 6300ESB I/O controller hub, is designed to operate with the latest Intel Pentium 4 processor supporting HT Technology and 800 MHz system bus, with the Intel E7210 chipset providing the intelligence to manage and prioritize the workloads. HT Technology is an Intel innovation which allows the processor to execute instruction threads in parallel so the processor can complete more tasks in the same amount of time. This maximizes the efficiency of the processor, improving system performance and responsiveness (HT Technology is also available on dual processor servers with the Intel Xeon processor and Intel E7501 chipset).

Leading-edge Chipset Innovations

The Intel E7210 chipset, with dual channel DDR-400 memory support, provides an aggregate memory bandwidth of 6.4 gigabytes per second (GB/s). This enables a balanced platform design and delivers maximum system performance for memory intensive server applications. The performance of a 3.20E GHz Intel Pentium 4 processor supporting HT Technology and the Intel E7210 chipset based server, as measured using the NetBench* benchmark, is 80% higher compared to a previous generation Intel Pentium 4 processor 2.40 GHz and Intel® 845E chipset-based system.

The Intel E7210 chipset-based platform provides a dedicated Ethernet networking bus interface based on Intel's Communication Streaming Architecture (CSA). With the Intel® 82547EI gigabit Ethernet controller, CSA provides dedicated I/O bandwidth to achieve near-wire-speed gigabit Ethernet performance.

Intel® Pentium® 4 processor/Intel® E7210 chipset-based entry server

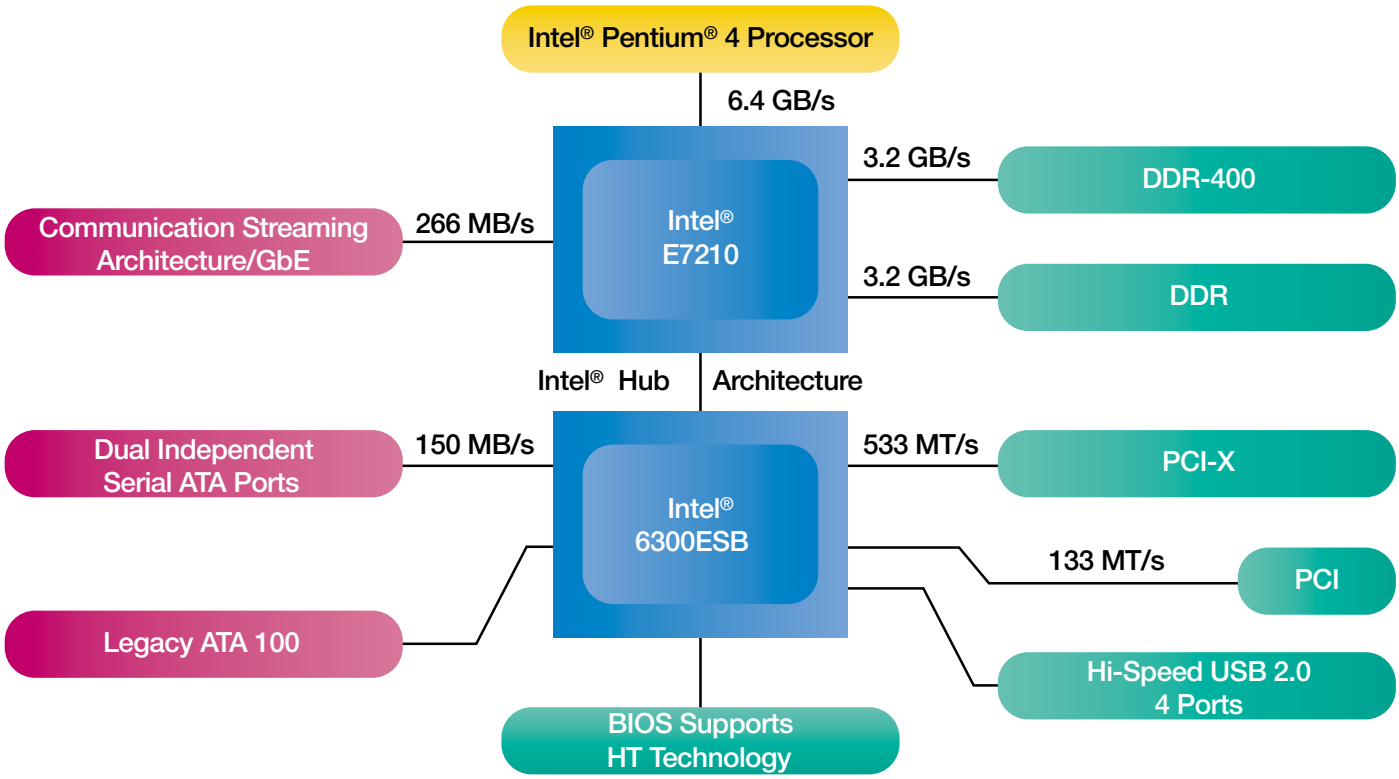


System configurations:
Source: Veritest* Labs (Dec '03)

- Intel® Pentium® 4 processor 2.40 GHz with 512kB L2 cache, Intel® 845E chipset based (Intel S845WD1) board with 533 MHz system bus; 1GB single channel DDR-266 memory; Microsoft* Windows* 2003 Server; Intel® PRO/1000 Gigabit Server adapter; Western Digital WD153BA 15.3GB 7200 rpm IDE (primary master), Maxtor 91024U3 10GB 7200 rpm IDE (primary slave), Maxtor 5T030H3 30GB 7200 rpm IDE (secondary master), Seagate ST340016A 40GB 7200 rpm IDE (secondary slave); NetBench Enterprise disk mix
- Intel® Pentium® 4 processor supporting HT technology 3.20 GHz with 512kB L2 cache, Intel® E7210 chipset based Intel reference server board with 800 MHz system bus; 1GB dual channel DDR-400 memory; Microsoft* Windows* 2003 Server; Intel® PRO/1000 Gigabit Server adapter; Western Digital WD153BA 15.3GB 7200 rpm IDE (primary master), Maxtor 91024U3 10GB 7200 rpm IDE (primary slave), Maxtor 5T030H3 30GB 7200 rpm IDE (secondary master), Seagate ST340016A 40GB 7200 rpm IDE (secondary slave); NetBench Enterprise disk mix
- Intel® Pentium® 4 processor supporting HT technology 3.20E GHz with 1MB L2 cache, Intel® E7210 chipset based Intel reference server board with 800 MHz system bus; 1GB dual channel DDR-400 memory; Microsoft* Windows* 2003 Server; Intel® PRO/1000 Gigabit Server adapter; Western Digital WD153BA 15.3GB 7200 rpm IDE (primary master), Maxtor 91024U3 10GB 7200 rpm IDE (primary slave), Maxtor 5T030H3 30GB 7200 rpm IDE (secondary master), Seagate ST340016A 40GB 7200 rpm IDE (secondary slave); NetBench Enterprise disk mix

NetBench is a portable benchmark program that measures how well a file server handles file I/O requests from 32-bit Windows clients. NetBench reports throughput and client response time measurements.

[1] Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting HT Technology, a chipset and BIOS that utilize this technology, and an operating system that includes optimizations for this technology. Look for systems with the Intel® Pentium® 4 Processor with HT Technology logo which your system vendor has verified utilize Hyper-Threading Technology. Performance will vary depending on the specific hardware and software you use. See www.intel.com/info/hyper-threading for information.



To support demanding disk I/O, the Intel E7210 chipset integrates two Serial ATA controllers with optional RAID 0 and 1 capability. RAID 0 striping increases storage performance and is designed to speed up data transfer rates for disk-intensive applications. RAID 1 mirroring protects valuable data that might be lost in the event of a hard drive failure.

Fast I/O performance is critical for servers. PCI throughput is often the obstacle to faster I/O performance. Unlike chipsets designed for the desktop market segment, the integrated PCI-X bridge in the Intel 6300ESB component allows higher I/O performance by supporting new PCI-X server cards that conform to the PCI-X 1.0 specification. Four integrated Hi-Speed USB 2.0 ports provide high bandwidth connectivity across a variety of peripherals.

Reliability and Manageability

A server needs to provide reliable operation and ensure data security. The Intel E7210 chipset incorporates enhanced system reliability features. In addition to error correction on the memory interface (ECC), the E7210 chipset also supports single memory channel operation, for a more cost effective system. Single channel operation is extremely useful in the event a single channel memory fails, allowing the system to continue to operate.

The Intel 6300ESB I/O controller hub enhances server manageability by integrating a programmable watchdog timer (WDT). The WDT increases system availability by monitoring the server for hardware and/or software lock-ups. Upon a lock-up, the WDT can either notify the operating system or perform a system reboot. The WDT can be accessed by operating system services or applications directly.

In addition to the built-in reliability features, the E7210 chipset is backed by more than 20 years of chipset experience, significant investment in research and development, and thousands of man-hours committed to chipset and software validation. As a result, an entry-level server based on the Intel Pentium 4 processor supporting HT technology and the Intel E7210 chipset delivers key features for value-conscious organizations running non-mission critical workloads and applications such as file and print sharing, web serving, firewalls, load-sharing and light weight application servers while meeting the rigorous quality and reliability standards enterprise users have come to expect.

The Intel E7210 chipset consists of two components:

The E7210 Memory Controller Hub (MCH): supports 800MHz and 533MHz system bus designs using DDR400 or DDR333 SDRAM memory respectively.

The 6300ESB I/O Controller Hub: integrates dual independent Serial ATA controllers, each capable of up to 150 MB/s transfer rate, for the most demanding storage data transfers. Four Hi-Speed USB 2.0 ports allow easy I/O connection, while offering improved bandwidth compared to USB 1.1 devices. The integrated PCI-X bridge supports up to four PCI-X devices total, and represents a significant increase in bandwidth compared to desktop systems.

Feature	Benefit
Intel® Pentium® 4 processor supporting HT Technology	Supports advanced CPU features and the fastest frequencies HT Technology extends system performance beyond GHz operation to increase system responsiveness
800 MHz front side bus	Coupled with faster processor speeds, it offers enhanced computing power to meet the requirements in entry server environments
Dual Channel DDR400 w/ ECC support memory bus	Provides optimal and balanced performance through matched processor and memory bus bandwidth ECC ensures data reliability and integrity Continues to operate in single channel mode in the event of a single memory channel failure
Integrated PCI-X bridge	Integrated bridge addresses the need for increased I/O bandwidth of PCI devices while reducing server bottlenecks An additional integrated PCI 2.2 compliant bus provides conventional and legacy PCI device connectivity
Communication Streaming Architecture Port (CSA)	With the Intel® 82547EI gigabit Ethernet component, CSA provides dedicated I/O bandwidth to achieve near-wire-speed GbE for higher performance Ethernet CSA offloads the I/O controller hub from LAN traffic to give PCI and storage devices more bandwidth
Integrated SATA controller with optional software[2] RAID 0,1 capability	Integrated software RAID capable controller provides faster disk bandwidths, performance and reliability while reducing bill of material costs with add-in devices on the motherboard
Integrated programmable watchdog timer	To maximize system availability, the server can be automatically restarted (or shut down) if the operating system, drivers, or services cease to function or lock-up
Four integrated Hi-Speed USB 2.0 ports	High bandwidth connectivity across a variety of peripherals via the integrated USB 2.0 ports USB 2.0 offers up to 40x bandwidth over the original USB 1.1 specification

[2] *Provided by 3rd party vendor. For additional information, please contact your Intel field sales representative.*

For more information, visit the Intel Web site at: developer.intel.com

Product Package	
Intel® Pentium® 4 Processor	478-pin Flip Chip-Pin Grid Array (FC-PGA)
Intel® E7210 MCH	1005 ball Flip Chip-Ball Grid Array (FC-BGA)
Intel® 6300ESB	689 ball Plastic Ball Grid Array (PBGA)
Intel® 82547EI Gigabit Controller	196-pin Plastic Ball Grid Array (PBGA)
Intel Access	
Intel® Pentium® 4 Processor	http://developer.intel.com/design/pentium4
Intel® Chipsets Home Page	http://developer.intel.com/design/chipsets
Intel® Server Products	http://developer.intel.com/design/servers/buildingblocks
Intel® Reseller Center	http://program.intel.com
Other Intel Support	http://support.intel.com
Intel Literature Center	(800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
General Information Hotline	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

UNITED STATES AND CANADA
Intel Corporation
Robert Noyce Bldg.
2200 Mission College Blvd.
P.O. Box 58119
Santa Clara, CA 95052-8119
USA

EUROPE
Intel Corporation (UK) Ltd.
Pipers Way
Swindon
Wiltshire SN3 1RJ
UK

ASIA-PACIFIC
Intel Semiconductor Ltd.
32/F Two Pacific Place
88 Queensway, Central
Hong Kong

JAPAN
Intel Japan (Tsukuba HQ)
5-6
Tokodai Tsukuba-shi
300-2635 Ibaraki-ken
Japan

SOUTH AMERICA
Intel Semicondutores do Brasil Ltda
Av. Dr. Chucri Zaidan, 940-10∞ andar
04583-904 São Paulo, SP
Brazil

Order Number: 300800-001